IDENTIFICATION OF HISTORICAL POPULATIONS OF COHO SALMON (*Oncorhynchus kisutch*) IN THE OREGON COAST EVOLUTIONARILY SIGNIFICANT UNIT

August 15, 2004

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This document should be cited as follows:

Lawson, P. W., E. Bjorkstedt, M. Chilcote, C. Huntington, J. Mills, K. Moore, T. E. Nickelson, G. H. Reeves, H. A. Stout, and T. C. Wainwright. 2004. Identification of Historical Populations of Coho Salmon (*Onchorhynchus kisutch*) in the Oregon Coast Evolutionarily Significant Unit. Review Draft. Oregon Northern California Coast Technical Recovery Team. NOAA/NMFS/NWFSC. 129 p.

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EXECUTIVE SUMMARY

In 2003, the Oregon Workgroup (Workgroup) of the Oregon Northern California Coast Technical Recovery Team (TRT) convened to review and analyze information that could shed light on historical populations of Oregon Coast coho salmon (*Onchorhynchus kisutch*). This document presents the preliminary conclusions of the Workgroup. A historical perspective describing how these populations functioned is an important first step in assessing viability of present-day populations and in developing de-listing criteria as an overall recovery strategy.

Documentation of life history traits, distribution, or abundance of Oregon Coast coho salmon prior to 1940 is limited. Considerable biological information has been gathered during the past thirty years, and particularly the past twelve years; however, it is difficult to relate the biological characteristics of modern populations to those that existed historically in the same basin. Human activities over the past 200 years have altered every aspect of salmon habitat on the coast, harvest has changed abundance patterns, and hatcheries may have blurred the distinctions among stocks. Coho salmon have adapted their behavior to many of these changes and, as a result, present-day Oregon Coast coho salmon populations function differently than they did historically. Nonetheless, we have tried to address where populations were historically and how these historical populations functioned.

To establish historical population boundaries, we relied on geographical and ecological characteristics of the landscape that have not been greatly altered by human activities. Geographical information was used in calculating the distance between ocean-entry points. Ecological characteristics were utilized in partitioning the Umpqua Basin into two historical populations. A total of 67 historical populations were identified through this analysis.

Our view of the historical population structure of Oregon Coast coho salmon relies on a simple conceptual model of the spatial relationships of 67 populations. We used a rule-based approach to identify populations. Subsequently, we utilized a Relative Independence Model to classify these populations on the basis of two key characteristics: persistence (their relative abilities to persist without input from neighboring populations), and isolation (the relative degree to which they might have been influenced by adult fish from other populations migrating into their spawning areas). The interaction of these two factors across what we believe to have been the historical populations of Oregon Coast coho salmon gives us a measure of Relative Independence. This Relative Independence gives us a basis for classifying the populations as Functionally Independent, Potentially Independent, and Dependent. Nine populations were identified as Functionally Independent, 9 as Potentially Independent, and 48 historical populations were identified as Dependent populations. We will use this classification in the next step—analyzing the viability of populations and ultimately of the ESU in order to identify quantitative goals for recovery. Two other recovery groups (the SONCC Workgroup and the Central California Coast TRT) are also using the Relative Independence Model to classify their populations.

These proposed historical populations are intended to be representative of the range and diversity of populations of Oregon Coast coho salmon, not necessarily an exact reconstruction. In this representation of historical populations, we assume that ocean feeding areas were a shared

resource and that, in the Umpqua Basin, populations probably shared juvenile rearing and migration corridors. Understanding the historical structure of populations in addition to their abundance and life-history characteristics provides a framework for comparing the historical to the present status of populations, the changes that have affected them, and the restoration of processes that may be necessary to recover them.

ACKNOWLEDGEMENTS

Identification of the historical populations of Oregon Coast coho salmon was conducted by a team of scientists from the NOAA Fisheries Northwest Fisheries Science Center (NWFSC), Oregon Department of Fish and Wildlife (Research Division) (ODFW), U.S. Forest Service (Pacific Northwest Research Station), Oregon Watershed Enhancement Board (OWEB), and Clearwater Biostudies, Inc. This Oregon Workgroup is a committee of the Oregon and Northern California Coast Technical Recovery Team (ONCC TRT; technical terms and abbreviations such as TRT are defined in the Glossary). The Workgroup relied on published literature, informational reports, and unpublished data made available by state, tribal, and federal agencies. The authors acknowledge the efforts of all who contributed to this process, especially the Oregon Department of Fish and Wildlife and the Oregon Watershed Enhancement Board.

Numerous scientists and fishery managers provided information that aided in preparation of this report on historical populations and deserve special thanks. We particularly want to thank the Independent Multidisciplinary Scientific Team (IMST) for their in-depth analyses on the role of lowlands in coho salmon life history. Thanks are also due to Bridgette Lohrman (OSU CIMRS), Cid Hughes (MES, Inc.), and Justin Mills (ORISE) for their significant contributions to this effort.

The Oregon and Northern California Coast Technical Recovery Team consists of Dr. Walt Duffy, USGS California Cooperative Fish Research Unit; Dave Hillemeir, Yurok Tribe Fishery Biologist; George Kautsky, Hoopa Valley Tribe Fishery Biologist; Dr. Thomas Lisle, USDA Forest Service (USFS), Pacific Southwest Research Station; Mike McCain, Six Rivers National Forest; Mike Rode, California Fish and Game Region I; Co-chairs Dr. Tommy Williams, SWFSC and Dr. Peter Lawson, NWFSC; Dr. Thomas Wainwright, NWFSC; Thomas Nickelson, ODFW; Charles Huntington, Clearwater Biostudies, Inc., and Dr. Gordon Reeves, USFS Pacific Northwest Research Station. Recovery Coordinators are Rosemary Furfey of NOAA Fisheries NW Regional Office, and Greg Bryant of NOAA Fisheries SW Regional Office.

The Oregon Workgroup for Oregon Coast coho salmon consists of Dr. Peter Lawson, Dr. Thomas Wainwright, Dr. Gordon Reeves, Thomas Nickelson, and Charles Huntington. Adjunct members are Mark Chilcote of ODFW and Kelly Moore of OWEB. Heather Stout of NOAA Fisheries NWFSC staffs the Oregon Workgroup.